

**THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF GEORGIA  
STATESBORO DIVISION**

**Brandi J. Sanders and Heather J. Sikes,  
Individually and as Administrators of the  
Estate of Janice F. Brown**

**Plaintiffs,**

**vs.**

**Norfolk Southern Railway Company and  
Justin Krull**

**Defendants.**

**No. 6: 15-CV-0004-GRS**

**EXPERT REPORT OF John M. Paquet, P.E.**

**June 4, 2015**

**Introduction**

CED Technologies, Inc. (CED) was asked to perform an accident analysis of a vehicle collision which occurred at the intersection of Veterans Memorial Parkway and Northside Drive in Statesboro, Georgia. It is reported that Mr. Justin Krull was driving a 2012 International 4400 lift boom utility truck north on Veterans Memorial Parkway and was attempting to turn left onto Northside drive when he collided with a 1992 Honda Accord driven by Ms. Janice Brown, that was traveling south on Veterans Memorial Parkway.

**Background**

The collision occurred around 6:18 a.m. on March 5, 2014 at the intersection of Veterans Memorial Parkway and Northside Drive in Statesboro, Georgia. It was dark and overcast at the time with light drizzle falling but the road displayed no significant wetting of the surface. At the time of the collision Mr. Krull was negotiating a left turn from northbound Veterans Memorial Parkway to travel west on Northside Drive and Ms. Brown was travelling south on Veterans Memorial Parkway through the intersection. At the same time, a witness and a co-worker of Mr. Krull, Mr. David Hoffman, was driving another International work truck north through the intersection. This intersection is controlled by traffic signal lights with left turn lanes controlled with

left turn signal lights and permissive left turns during the solid green signal intervals. The speed limit for Veterans Memorial Parkway is posted at 45 mph for both northbound and southbound traffic. The speed limit for Northside Drive is posted at 40 mph for eastbound and westbound traffic. The State of Georgia Traffic Crash Report and other narratives describe the travel directions as north and south for Veterans Parkway and east and west for Northside Drive and these direction headings will be used for the purposes of this report.

### **Investigation**

This CED investigation consisted of inspection of the accident site and vehicles on April 10, 2014, and review of the following materials:

<u>Document</u>	<u>Date</u>
1. State of Georgia Traffic Crash Report GSPF14CAD009998	
2. Georgia State Patrol Specialized Collision Reconstruction Collision Analysis Report; Case Number SCRTF-010-14	
3. Dash Cam Video from Deputy First Class Reid Odom, Bulloch County Sheriff's Office Patrol Car	March 5, 2014
4. Georgia State Patrol Specialized Collision Reconstruction Team audio recording of interview with Mr. David Hoffman	March 5, 2015
5. Georgia State Patrol Specialized Collision Reconstruction Team audio recording of interview with Mr. Justin Krull	March 5, 2014
6. Deposition transcript of Mr. Daniel Ray Newsome	May 13, 2015
7. Download files from the Norfolk Southern Railway truck # 31524, 2012 International 4400 truck MaxxForce DT 9/10 engine control module	April 10, 2014
8. Photographs of vehicles by Mr. Barry Riner	
9. Complaint	December 17, 2014
10. Plaintiff's Response to Defendants' Norfolk Southern	March 10, 2015

<u>Document</u>	<u>Date</u>
Railway Company and Justin Krull's Interrogatories and Request for Production of Documents	
11. Expert Report of Barry Riner, Collision Consultants of Georgia	April 30, 2015
12. Expert Report of David Brill, Collision Analysis and Investigations	
13. Google Street View images of intersection of Northside Drive and Veterans Memorial Parkway	April 2014
14. Google Earth aerial imagery of the intersection and surrounding structures	March 28, 2013
15. U.S. Naval Observatory, Sun and Moon Data for One Day: Statesboro, Georgia March 5, 2014	

### **Review of Written Materials**

#### **1. State of Georgia Traffic Crash Report GSPF14CAD009998**

- 1.1. The crash was reported at 6:18 a.m. on March 5, 2014.
- 1.2. The time of crash is indicated to be 6:18 a.m. on March 5, 2014.
- 1.3. The location of the crash is indicated to be on SR-73 BYP and the intersection with Northside Drive.
- 1.4. The intersection is reported to be controlled by multi-phase traffic signals.
- 1.5. Light and weather conditions are reported to be dark-not lighted and rain.
- 1.6. Vehicle 1 is reported to be a 2012 International work truck with lift boom registered to Norfolk Southern Railway Company and driven by Mr. Justin D. Krull.
- 1.7. Vehicle 2 is reported to be a 1992 Honda Accord LX 4 door driven by Ms. Janice Brown Lanier.
- 1.8. The narrative section of the report states: "Vehicle #1 was travelling north on GA 73 By-Pass and was attempting to turn left onto Northside DR. Vehicle 2 was travelling south on GA 73 By-Pass. Vehicle #1 turned left and struck vehicle #2 in the left front quarter panel and left driver door with its front bumper. Both vehicles came to an uncontrolled rest in the left turn lane of Northside DR facing west. This crash investigation was turned over to the Georgia State Patrol Troop F SCRT team. This accident investigation was recorded on DVD 993-005-2014."

- 1.9. The crash scene diagram indicates that the vehicles came to rest facing west in the eastbound left thru lane and left turn lane of Northside Drive.
- 1.10. The Reporting Officer for this report is indicated to be Trooper C. Hutchinson of the Georgia State Patrol.

**2. Georgia State Patrol Specialized Collision Reconstruction Collision Analysis Report; Case Number SCRTF-010-14**

- 2.1. The report indicates that Mr. David Hoffman was driving a Norfolk Southern Truck and was stopped for a red traffic light for northbound Georgia Highway 73-Bypass at Northside Drive.
- 2.2. The report indicates Mr. Hoffman stated the light turned green and they were entering the intersection when he noticed the vehicle approaching at what appeared to be a high rate of speed.
- 2.3. Corporal Peck and Senior Trooper Hinson inspected the 1992 Honda at Baird's Towing on March 11 and found no mechanical defects that could have contributed to the collision.
- 2.4. Corporal Peck, Senior Trooper Hinson and MCO III Roy Williamson inspected the 2012 International truck at DeLoach Diesel & Towing and found no mechanical defects that could have contributed to the collision.
- 2.5. On March 13, 2014 they received a written witness statement from Bulloch County Deputy Reid Odom stating that he was patrolling in his marked vehicle westbound on U.S. Highway 80 at the Georgia Highway 73 Bypass.
- 2.6. At the time of collision, Deputy Odom was in the right turn lane attempting to turn right and travel north on Georgia Highway 73 Bypass.
- 2.7. The report states that Deputy Odom indicated in his written statement he observed southbound and northbound traffic had green lights.
- 2.8. Deputy Odom reported he heard a loud boom and turned his vehicle across the intersection to assist at the crash scene.
- 2.9. The report was compiled by Corporal Richard Peck to the Georgia State Patrol Specialized Collision Reconstruction Team.
- 2.10. The speed limit on Georgia Highway 73 Bypass (Veterans Memorial Parkway) is reported to be 45 mph.
- 2.11. Lighting conditions are reported to be "dark" and weather is reported to have been "light drizzle".
- 2.12. Traffic light timing data included in the report indicates that Mr. Krull was travelling through the intersection on the movement controlled by Phase 7 and Ms. Brown was travelling through the intersection on the movement controlled by Phase 8.

- 2.13. The light timing documentation indicates that the left turn signals on Veterans Memorial Parkway precede the opposing through traffic signals and only activate on-demand using roadway sensor loops.
- 2.14. Mr. Krull's written statement indicates the following: "I pulled into the LH turn lane (turn signal on). The light was red. After a moment or two it changed to a LH turn arrow and two green lights. I started into my turn and checked traffic to my left. When I turned my head my eyes caught the flood lights of the car dealership across the intersections. When I turned my head back straight to check forward traffic again, that's when I saw her car entering the intersection, I quickly steered the wheel to right to avoid the collision but it was too late."
- 2.15. The Indiana Registration Cab Card included in the report indicates the unladen weight of the 2012 International truck is 11585 lbs. and a combined gross weight rating of 33,000 lbs.
- 2.16. The Expert Autostats vehicle data for a 1992 Honda Accord LX 4 Door included in the report indicates the curb weight of the Honda is 2866 lbs.

**3. Dash Cam Video from Deputy First Class Reid Odom, Bulloch County Sheriff's Office**

- 3.1. The video is approximately 15 minute, 40 second long.
- 3.2. Water droplets, suggesting rainfall, can be seen on the windshield of the patrol car.
- 3.3. Water droplets slowly appear and disappear on the windshield for the first 8 minutes of the video.
- 3.4. The rainfall rate increases noticeably after 8 minutes into the video.
- 3.5. The first 48 seconds shows the approach of Deputy Odom's patrol car westbound along Northside up to a stop in the right turn lane at the intersection with Veterans Memorial Parkway.
- 3.6. Beginning around 34 seconds into the video, traffic can be seen stopped for the red light in the northbound lanes of Veterans Memorial Parkway.
- 3.7. The general size and shape of at least one of the stopped vehicles in the northbound lanes of Veterans Memorial Parkway is consistent with the Norfolk Southern truck driven by Mr. Hoffman.
- 3.8. The traffic light for northbound Veterans Memorial Parkway can be seen to change from red to green at approximately 40.0 seconds into the video.
- 3.9. Headlights from a single vehicle travelling south on Veterans Memorial Parkway, which is apparently Ms. Brown's 1992 Honda, can be seen entering the field of view around 46 seconds into the video.

- 3.10. Deputy Odom's vehicle remains stationary from around 47 seconds to approximately 52 seconds into the video.
- 3.11. A vehicle travelling northbound enters the field of view around 46.24 seconds into the video.
- 3.12. A total of 3 northbound vehicles, all apparently in the left lane, pass into the field of view before Mr. Hoffman's Norfolk Southern truck is seen entering the field of view around 53.23 seconds into the video.
- 3.13. Mr. Hoffman's truck is travelling in the right lane and moving toward the shoulder in the video.
- 3.14. During the period that Deputy Odom's patrol car is stationary, Ms. Brown's vehicle passes between the camera and the bright lights of Franklin Chevrolet located on the northwest corner of the intersection.
- 3.15. The lights and buildings of Franklin Chevrolet are discernible in the video.
- 3.16. The headlights of the southbound vehicle consistent with Ms. Brown's 1992 Honda can be seen to pass in front of the rightmost street light on the Franklin Chevrolet property at approximately 48.78 seconds into the video.



*Figure 1: Frame capture from Dash Cam Video, at approximately 48.78 second point*

- 3.17. The headlights of the southbound vehicle consistent with Ms. Brown's 1992 Honda can be seen to pass in front of the southeast corner of the Franklin Chevrolet Collision Center building at approximately 49.38 seconds into the video.





Figure 2: Frame capture from Dash Cam Video, at approximately 49.38 second point

- 3.18. The headlights of the southbound vehicle consistent with Ms. Brown's 1992 Honda can be seen to pass in front of the southeast facing flood light at the eastern edge of the Franklin Chevrolet property which is also in-line with the 4-luminaire parking lot light in the southeast parking lot of Franklin Chevrolet, at approximately 50.38 seconds into the video. This is 18 frames after the vehicle headlights pass in front of the southeast corner of the Collision Center building and 48 frames after the headlights pass in front of the rightmost parking lot light.



Figure 3: Frame capture from Dash Cam Video, at approximately 50.38 second point

- 3.19. The video shows the rest positions of the vehicles extending west from the western half of the cross walk with the right side tires of the Honda near the

double yellow center line separating the westbound lanes and eastbound left turn lane of Northside Drive.

3.20. Both vehicles are facing west, nearly aligned with the alignment of Northside drive.

**4. Georgia State Patrol Specialized Collision Reconstruction Team audio recording of interview with Mr. David Hoffman**

4.1. Mr. Hoffman is a co-worker of Mr. Krull, they are both employees of Norfolk Southern Railway Company.

4.2. He was staying at the Holiday Inn on Commerce drive.

4.3. He awoke around 5 a.m. and started driving around 6:20 a.m. from the Holiday Inn on Commerce Drive in Statesboro, Georgia.

4.4. He started his truck and performed a pre-trip inspection on his truck starting around 6:00 a.m.

4.5. He pulled out of the parking lot around the same time as Mr. Krull.

4.6. He stopped at the red light.

4.7. He was going straight at the intersection, Mr. Krull was turning left.

4.8. This was his first time in Statesboro for work.

4.9. He saw a police vehicle on the opposite side of the intersection in the right turn lane.

4.10. He looked over and saw Mr. Krull was in the left turn lane.

4.11. He saw the light turn green and both he and Mr. Krull started to travel into the intersection at the same time.

4.12. As he entered the intersection he saw the car coming south extremely fast.

4.13. He tried to reach the radio to warn Mr. Krull of the approaching car but was unable to in the short time he had before the collision.

**5. Georgia State Patrol Specialized Collision Reconstruction Team audio recording of interview with Mr. Justin Krull**

5.1. He was staying at the Holiday Inn on Commerce Drive.

5.2. He came to the Statesboro Holiday Inn Sunday night the week of the accident.

5.3. This was his first time working in Statesboro.

5.4. He awoke around 5:30 a.m.

5.5. He left the hotel around 6:07.

5.6. There was no traffic in front of him.

5.7. He pulled into the left turn and the light was red.

5.8. He stopped for the red light.



- 5.9. He came to a complete stop.
- 5.10. It was red for only a moment or two and turned green.
- 5.11. He saw the left arrow and two green lights for northbound traffic.
- 5.12. When he looked to his left he saw the flood lights in the car dealership.
- 5.13. When he looked forward he saw the headlights but it was too late to avoid the collision.
- 5.14. There was no traffic behind him in the left turn lane.
- 5.15. There was no other traffic he recalls going southbound.

**6. Deposition transcript of Mr. Daniel Ray Newsome**

- 6.1. He was travelling west on Northside Drive and witnessed the crash.
- 6.2. He was stopped for a red light for westbound traffic.
- 6.3. He saw the collision.

**7. Download files from the Norfolk Southern Railway truck # 31524, 2012 International 4400 truck MaxxForce DT 9/10 engine control module**

- 7.1. Indirect crash data was recorded in the form of diagnostic trouble codes recorded when engine sensors were damaged or out of range parameters occurred that resulted from the crash damage.
- 7.2. No hard brake or other data specifically associated with the vehicle motion leading up to and after the crash was recorded.
- 7.3. Snapshot 8 reports a fault code: DPFOT (Diesel Particulate Filter Outlet Temperature) signal does not agree with other exhaust sensors.
- 7.4. Snapshot 8 has associated freeze frame data indicating a vehicle speed of 18.06 mph and an engine load of 72 percent and a manifold pressure of 1.74 psi.
- 7.5. No data is provided indicating what the recording rate is for the registries used to record engine and vehicle parameters when a fault code is set in the engine control module for this vehicle.
- 7.6. The engine data indicates the engine in this International truck is rated at 285 Horsepower.
- 7.7. The engine data indicates the vehicle is equipped with an Allison MD transmission.

**8. Photographs of vehicles by Barry Riner**

- 8.1. Photographs reported to have been taken by Mr. Barry Riner were reviewed.

8.2. The photographs showed the 2012 International truck and the 1992 Honda.

8.3. Photographs of lighting equipment on the Honda show deformed filaments.

## **9. Complaint**

9.1. The complaint, dated December 17, 2014 has been reviewed.

## **10. Plaintiff's Response to Defendants' Norfolk Southern Railway Company and Justin Krull's Interrogatories and Request for Production of Documents**

10.1. The Plaintiff's Response to interrogatories and exhibits have been reviewed.

## **11. Expert Report of Barry Riner, Collision Consultants of Georgia**

11.1. In his report Mr. Riner states: "The international truck would have been traveling approximately 21 mph at impact with the Honda.

11.2. In his report Mr. Riner states: "The International truck experienced a change in velocity of 3.08 mph during impact."

11.3. In his report Mr. Riner states: "The truck, has a governed engine rpm that would allow and acceleration factor of 0.10- 0.11 at best."

11.4. "With that acceleration factor the truck would need from between 135.0 feet up to 148.5 feet to reach the speed of 21 mph."

11.5. "The distance from the stop bar where Mr. Krull should have stopped is approximately 85 feet to the area of impact."

11.6. "The truck would not reach the terminal speed of 21 mph if Krull had been stopped as he suggested."

## **12. Expert Report of David Brill, Collision Analysis and Investigations**

12.1. In the report he states: "Snapshot 8 occurs at engine hour 2267.2, which is 0.1 hours less than the engine hours reported at the time the ECM was imaged. The speed of the vehicle was 18.06 mph with an engine speed of 786 rpm's. However, at engine idle, the engine load was 72% which is often associated with and event in which the vehicle is being stressed while traveling in a forward position. If the vehicle was towed from the scene and has not been driven since the day of the crash, this fault code is associated with the collision, and the recorded speed would represent the minimum impact speed less the change if (sic) velocity experienced by the vehicle during the collision phase."

- 12.2. The report also states: “The vehicle under inspection, based upon normally accepted range of acceleration factors, would need approximately 108.0 to 147.0 feet to reach this range of impact speeds.”

**13. Google Street View images of intersection of Northside Drive and Veterans Memorial Parkway**

- 13.1. Street View images taken in the intersection and reported to be from April 2014 show paint marks in the intersection consistent with markings associated with this accident and the investigation by the Georgia State Patrol.
- 13.2. These marking show the area of impact to be in the right, southbound lane and aligned with the south side of the eastbound left turn lane.



*Figure 4: Street View image looking northwest at paint markings in area of impact*

- 13.3. Paint marks also suggest that approximately 30 feet of pre impact skid marks were left by the Honda as it travelled into the collision.
- 13.4. Street View images also show a view point from the right turn lane very similar to the position of the dash-camera view from the patrol car where it was stationary, with the exception of a higher camera elevation in the Street View image. This view is shown below with the features used in triangulating the location of the southbound Honda pointed out.



Figure 5: Street View image looking northwest from right turn lane to northbound Highway 23 Bypass  
Showing reference points used for triangulation of vehicle positions

#### **14. Google Earth aerial imagery of the intersection and surrounding structures**

- 14.1. The location of the dash-mounted camera in Deputy Odom's patrol car during the period he was stationary in the right turn lane was triangulated from the pole-mounted parking lot lights in the Franklin Chevrolet lot and the lane markings adjacent to the patrol car.
- 14.2. Using the triangulated camera position and the location of the pole mounted lights and the southeast corner of the Collision Center building visible in the video, sight lines were drawn and the positions of the front of the southbound vehicle in the right lane were determined as it crossed these sight lines.
- 14.3. These sight lines are annotated in Figure 6 below:



Figure 6: Google Earth aerial image showing sight lines to reference points in dash-camera video

- 14.4. Using the intersection points of these sight lines with the right lane of southbound Veterans Memorial Parkway, the distance the southbound vehicle travelled between these points were measured using Google Earths measuring tools.
- 14.5. It has been calculated the vehicle travelled between 130 and 135 feet between the rightmost street light sight line (upper line in 14.3) and the southernmost sight line in a time of approximately 1.601 seconds or 48 frames on the video.
- 14.6. It has been calculated the vehicle travelled between 81 and 87 feet between the sightline to the southeast corner of the Collision Center building and the southernmost sight line in a time of 1.001 seconds or 30 frames on the video.
- 14.7. Assuming a curving path from the stop bar in the northbound left turn lane to the area of impact in the right southbound lane, as shown in Figure 7 below, the travel distance from the stop bar to the area of impact for the International truck driven by Mr. Krull was approximately 105 to 110 feet.





*Figure 7: Google Earth aerial image showing curved travel path from stop bar to area of impact, a distance of approximately 107 feet along the arc path*

**15. U.S. Naval Observatory, Sun and Moon Data for One Day: Statesboro, Georgia March 5, 2014**

- 15.1. Sunrise was approximately 6:50 a.m. on March 5, 2014 in Statesboro, Georgia.
- 15.2. The beginning of civil twilight was approximately 6:25 a.m. on March 5, 2014 in Statesboro, Georgia.
- 15.3. The moon was below the horizon at the time of the accident and did not rise until approximately 9:33 a.m. on March 5, 2014 in Statesboro, Georgia.

**Inspection of the Intersection of Veterans Memorial Parkway and Northside Drive**

The accident site was inspected on April 10, 2014. The subject intersection is controlled by traffic lights with vehicle sensor loops to sense traffic volume on Northside Drive, through traffic demand on Veterans Memorial Parkway and left turn demand for all travel directions. The roadways intersect at approximately 64 /116 degree angles.

At the time of inspection, all roadway markings from the Police investigation had been worn away and the area of impact could not be established. Consequently, images from the video, photographs with the SCRT Report, and Google Street View images have been used to locate the area of impact and rest for the vehicles.

### **Inspection of Vehicles**

The vehicles were inspected on April 10, 2014. The vehicles were photographed and general measurements were taken. The 2012 International 4400 truck was inspected in Garden City, Georgia at the facilities of Norfolk Southern Railway Company. The download of the ECM in the International truck was witnessed during the inspection of the truck. The 1992 Honda was inspected at the facilities of Baird's Towing in Statesboro, Georgia.

### **Discussion**

The review of the Freeze Frame Fault Data from the engine control module (ECM) of the 2012 International truck indicates a vehicle speed of 18.06 mph when an exhaust temperature fault occurred. What is not indicated is how the other engine parameter data are recorded. This fault code was most likely set when an exhaust sensor was damaged or its wiring harness cut in the collision. Typically, when a fault is set the engine parameter data in the memory register is recorded. It is not indicated if this data is recorded from live parameters recorded after the fault or from data already set in the registry prior to the fault code being flagged by the ECM. It is also not indicated at what rate this data is recorded and updated. This is important as the 18.06 mph speed recorded could represent data prior to or after the impact. Therefore, 18.06 mph may represent the vehicle speed entering the collision or after the speed loss from the impact with the Honda. As the engine is still reporting a 72% engine load and 1.74 psi of intake pressure, parameters more consistent with a vehicle under acceleration, not post-impact, these parameters may all represent pre-impact engine and vehicle parameters and indicate the speed of the truck at impact was around 18 mph, not 21 mph as opined by Mr. Riner.

Based on both the testimony of Mr. Hoffman and Mr. Krull, Mr. Krull came to a complete stop in the left turn lane immediately before the light turned green. The evidence is consistent with Mr. Krull coming to a complete stop before accelerating into the intersection. The horsepower rating of the engine in Mr. Krull's truck and the indicated unladen weight of 11585 pounds with the Allison MD automatic transmission



will permit the truck to accelerate from a stop at around a 0.3 g average for a distance of 105 feet at maximum power. The distance he had to travel from the stop bar to the area of impact and the performance characteristics of this truck are all sufficient for the International truck to accelerate from a stop at the left turn lane stop bar to a speed of 18 mph or 21 mph to at area of impact, contrary to the opinions of Mr. Brill and Mr. Riner. The required average acceleration rates are only 0.10g and 0.14 g to accelerate in 110 feet from a stop to 18 and 21 mph, respectively.

The dash-cam video from Deputy Odom's patrol car was used for triangulation of the vehicle position with the background lights to determine the travel distance of the Honda. Using the elapsed time in the video and checking against the National Television System Committee (NTSC) standard frame rate of 29.97 frames per second record/playback rate, the time for the Honda to cover these distances was calculated. Dividing the distance by the elapsed time in the video, the speed of the Honda has been calculated. Using the calculated travel distance of 130 to 135 feet over a time of approximately 1.601 seconds yields an average speed over the first interval of 55 to 57 mph. The second interval used was calculated between 81 and 87 feet and was covered in a time interval of approximately 1.001 seconds, yielding an average speed between 55 and 59 mph.

Assuming a constant acceleration rate to a speed of 18 mph, the time for Mr. Krull to travel from a stop to the area of impact would be approximately 8.0 seconds. Using Mr. Riner's 21 mph speed at impact, it would take approximately 6.8 seconds to cover this distance. Using these times, and the calculated initial speed of the Honda of 55 mph, the Honda would have been approximately 645 to 548 feet from impact when the International truck began to accelerate from the stop bar. If we assume the Honda was in the same position at the time the International truck began to accelerate from the stop bar but the Honda was travelling at the posted speed limit of 45 mph instead of 55 mph, the Honda would only have travelled 528 feet to 448 feet in the time required for the truck to accelerate to 18 or 21 mph, respectively. This would place the Honda 117 to 100 feet (1.77 to 1.51 seconds) from the area of impact when the International truck reached the area of impact. At 18 mph, the International truck would have cleared the area of impact in approximately 1.0 to 1.2 seconds. If a perception/decision time for Mr. Krull is added to the travel time and to locate the Honda north of the area of impact, the separation between the vehicles as the Honda entered the area of impact is even greater. Clearly, if Ms. Brown had been driving at the posted speed limit of 45 mph, this collision would have been avoided.

## Conclusions

Based on the inspection of the accident site and the involved vehicles and review of the listed materials, as well as extensive education and experience in the field of engineering, I am able to conclude, to a reasonable degree of engineering certainty, that:

- The 2012 International 4400 truck driven by Mr. Krull, with the 285 horsepower rated MaxxForce engine, was easily capable of accelerating from a stop to a speed of 21 mph in the approximate 105 to 110 foot distance from the left turn lane stop bar to the area of impact.
- The 2012 International 4400 truck could accelerate over a distance of 105 feet to a speed of 18 mph to 21 mph in 8.0 to 6.8 seconds, respectively.
- The dash-camera video from Deputy Reid Odom's patrol car shows Ms. Brown's 1992 Honda Accord was traveling at a speed of 55 mph to 57 mph prior to entering the intersection.
- If the Honda had been traveling at 45 mph from the same position it was actually located on southbound Veterans Memorial Parkway when Mr. Krull began to accelerate from a stop into the intersection, the collision would not have occurred.

Submitted By:



John M. Paquet, P.E.  
Mechanical Engineer

Reviewed By:



Thomas M. Destafney, P.E.  
Senior Civil Engineer

## **QUALIFICATIONS**

This CED engineer qualifies as an expert by virtue of education, experience and training. Please see the curriculum vitae attached as Appendix A.

## **PUBLICATIONS**

This CED engineer has no published works.

## **COMPENSATION**

This CED engineer is being compensated for this analysis per the rate sheet attached as Appendix B.

## **TESTIMONY SUMMARY**

A summary of the testimony of this CED engineer is attached as Appendix C.

## **Appendix A - CURRICULUM VITAE**

### **JOHN M. PAQUET, P.E. Mechanical Engineer**

#### **Academic Background**

B.S., Mechanical Engineering, University of South Carolina, Columbia, South Carolina, 1985  
Traffic Accident Reconstruction, University of North Florida, Jacksonville, Florida, 1991  
Arson Investigation, Northwestern University, Evanston, Illinois, 1995

#### **Registrations**

Registered Professional Engineer, State of Florida, License No. 45573  
Registered Professional Engineer, State of Georgia, License No. 24013  
Registered Professional Engineer, State of South Carolina, License No. 13946

#### **Qualifications**

CXLT Certification, Certificate No. 1301471, EXCEL Tribometers, LLC, January 2013  
CFEI, Certified Fire and Explosion Investigator, Registration No. 19099-10812,  
International Fire, Arson, & Explosion Investigation Training Program, Richmond, Kentucky,  
March 2014

#### **Professional Work History**

Mechanical Engineer, CED Technologies Inc., 2009-Present  
Staff Forensic Engineer, CRAIG/is Limited, 2001-2009  
Principal Engineer, Sandpiper Engineering, Inc., 1997-2001  
Forensic Engineer, Engineering Design & Testing Corporation, 1987-1997  
Design Engineer, Pirelli Cable Corporation, 1986-1987  
Mechanic, Tri-City Bicycle Center, 1981-1986

#### **Professional Societies**

American Society of Mechanical Engineers (ASME)  
Society of Automotive Engineers (SAE)  
International Association of Arson Investigators (IAAI)  
National Association of Fire Investigators (NAFI)  
National Association of Professional Accident Reconstructionists (NAPARS)

#### **Areas of Expertise**

Mechanical Engineering	Accident Reconstruction
Fire Investigation	Origin and Cause
Product Liability	Analysis and Testing
Heavy Equipment	Plumbing Components
Bicycles	

## **APPENDIX B - FEE SCHEDULE**

**Effective January 2015**

**JOHN M. PAQUET, P.E.**

**Mechanical Engineer**

**\$225.00 per hour**

### **Time**

Engineering time is billed at the same rate for all services including research, review, analysis, testing, inspections, depositions, trial, testimony and travel. There are no charges or administrative fees for opening or maintaining case files.

### **Expenses**

Normal expenses and costs will be charged to the case. These include:

Mileage	\$0.68 per mile
Digital Photographic and CD	\$0.38 per photograph
Video Recording	\$45.00 per tape
Large Media Print	\$70.00 per print
Laboratory Usage Fee	To be specified
Equipment Storage Fee	To be specified
Special Equipment for Testing	At cost
Testing Materials	At cost
Travel Tickets	To be specified
Hotel, Meals, etc.	To be specified

Materials and/or other specified expenditures that are required to the case will be charged at cost. Items purchased that are retained by CED and usable in other cases will not be charged.

Activities are billed monthly or at the completion of a work phase. All balances are due upon receipt of invoice. Rates are subject to change without notice. Unpaid bills are charged a service fee of 1 ½ % per month for unpaid balances.

CED reserves the right to require a retainer. This retainer is a forward payment of future services for which the client has contracted, retained and agreed upon the engineer's billable rates and expenses.

The receipt of the signed Client Letter of Agreement (LOA) or case file material received by CED indicates the acceptance of rates and terms and conditions of the LOA.

If there is a question about any item on our fee schedule, please call to discuss your concern. Our ultimate goal is to provide you with the highest level of service possible.

**APPENDIX C - TESTIMONY SUMMARY**

Date	Deposition Trial	Case Title	Pltf Def	Court Location	Docket No.	Attorney
1990	Deposition	Vehicle accident / moped 2531	Def	Richland County, SC		Horger, Horger, Lance & Lanier
1990	Deposition	Higgins Construction Co. 2544	Pltf	Lexington County, SC		Employers Casualty Insurance
1990	Deposition	Semi, school bus, truck collision, RJR Nabisco	Def	Newberry County, SC		Kemper Insurance
1990	Deposition	Exam of Motorcycle tire 2938	Def	Horry County, SC		Harleysville Insurance
1990	Deposition	Examine trailer 2978				Allen, Gantt & Best
1990	Deposition	Auto Motorcycle Collision 2981	Def	Kershaw County, SC		Allstate Insurance
1990	Deposition	Peggy Redmond v Ford 2985	Pltf	Richland County, SC		Furr & Henshaw, PA
1991	Deposition	Tire Injury 3060	Pltf	Charleston County, SC		Harleysville Insurance
1991	Deposition	Tractor Trailer / Train Collision , CSX	Pltf	Dorchester County, SC		St Paul Fire & Marine Insurance
1991	Deposition	Examine Tire 3361	Def			Gay & Taylor
1991	Deposition	Wheel Separation APC Transport 3455	Def	Gaston County, NC		Cigna Insurance
1991	Deposition	Vehicle Accident: Rebecca Armstead & Yvonne Rook 3470	Def			Nationwide Insurance
1991	Deposition	Vehicle Accident: Castina	Def			Farm Bureau Insurance

Date	Deposition Trial	Case Title	Pltf Def	Court Location	Docket No.	Attorney
		Arthur & Wayne Jordan 3478				
1991	Deposition	Sturkie v. S.N.E. Transportation Company	Def	Lexington County, SC		Richardson, Plowden, Grier & Howser, Pa
May 25, 1993	Trial	Offroad bicycle accident Roberts v. City Of Jacksonville	Pltf	Duval County, FL		Brown, Terrell, Hogan, Ellis, Mclanna & Yegellwel, atty Timothy Ellis
July 20, 1993	Trial	Vehicle Accident Warren & Dart Transit	Def	Port Wentworth, GA		Dart Transit
Feb 18, 1994	Deposition	Dunaway v. Food Craft	Pltf	Escambia County, FL		Robert J. Powell
Aug 9, 1994	Deposition	VIP Tours Of Orlando, Inc. v. Old Dominion Freight Line And Leroy Glen Reid	Def	Orange County, FL		Rumberger, Kirk & Caldwell Atty Adams
Feb 3, 1994	Deposition	Wright v. Fleetwood Enterprises, Inc.	Pltf	Duval County, FL		Saalfeld, Catlin, Coulson & Etheridge, Pa Gail Stafford
Sept 2, 1994	Deposition	1984 Chevrolet / Insured Cathryn Anderson	Def	Horry County, SC		Hudson, Lawson & Gwin, Pa
June 28, 1994	Trial	2 Vehicle Accident / I-40 Hickory, North Carolina	Def	Hickory, NC		Avery, Crosswhite, Carpenter & Smith, Pa
May 5, 1994	Deposition	Shah v. Deberry Electric	Def	Duval County, FL		Caven, Clark, Ray & Tucker, Pa
Jan 24, 1995	Deposition	Vazquez v. Certified Sweeping	Def	Dade County, FL		Bedford & Kray, Pa
Aug 28, 1995	Deposition	Robert Switek v. Coachmen Industries, Inc.		Camden County, GA		Dillard, Bower & East, Pa
June 12, 1995	Deposition	Kearney v. Integon	Def	Orange County, FL		Charles R. Steinberg, PA



Date	Deposition Trial	Case Title	Pltf Def	Court Location	Docket No.	Attorney
June 22, 1995	Trial	Kearney v. Integon	Def	Orange County, FL		Butler, Burnette & Pappas, Pa, Atty William Wallace
Sept 21, 1995	Deposition	Murray & P.I.E. v. Andrews	Def	Bradford County, FL		John H. Piccin, Pa Matthews & Hession, PA, atty. Robert B. Guild
June 5, 1995	Deposition	Arthur Carter v. Integon	Def	Nassau County, FL		Fannin, Tyler & Hamilton, Pa
July 13, 1995	Deposition	Craven v. Skate-N-Space	Def	Clay County, FL		Brent Turbow
July 27, 1995	Trial	Craven v. Skate-N-Space	Def	Clay County, FL		Lester & Mitchell, Pa
Dec. 19, 1995	Trial	Jimmy East Fantv .v Atlantic Casualty Company		Duval County, FL		Winter Law Firm
Jan 27, 1995	Deposition	Vehicle Accident / Petra Regina Wright	Pltf	Richland County, SC		Nelson, Mullins, Riley & Scarborough, Pa
Sept 13, 1996	Deposition	Thomas Luckie v. Bes-Pac, Inc.	Pltf	Escambia County, FL		Simpson & Simpson
Aug 14, 1996	Deposition	Great American Insurance Company v. Kubota Tractor	Pltf	Marion County, FL		Landt, Wiechens, Trow & Lapeer
July 19, 1996	Deposition	Undergrowth, Inc.	Def	Duval County, FL		Kent, Hayden, Facciolo & Johnson Matthews & Hession, atty Frank Hession
Jan 18, 1996	Trial	Vehicle Accident Recon. / William W. Thistle / Armellini Transport Lines	Def	Marion County, FL		Handlin & Hefferan, Pa

Date	Deposition Trial	Case Title	Pltf Def	Court Location	Docket No.	Attorney
Sept 26, 1996	Deposition	Vehicle Accident Reconstruction / William W. Thistle / Armellini Transport Lines		Marion County, FL		Wicker, Smith, Tutan, O'Hara, McCoy, Graham & Ford, Pa
June 7, 1996	Deposition	State Of Florida v. Greg Scott Harris	Prs	Duval County, FL		FL State Attorney Office
June 14, 1996	Deposition	State Of Florida v. Greg Scott Harris	Prs	Duval County, FL		FL State Attorney Office
Jan 1997	Deposition	Washington v. Gary	Def	St Johns County, FL		Miller, Shine & Bryan
Jan 29 & 30, 1997	Trial	Washington v. Gary	Def	St Johns County, FL		Saalfeld, Catlin, Coulson & Etheridge, atty Gail Stafford
Feb. 4, 1997	Trial	Vehicle Accident Reconstruction / William W. Thistle / Armellini Transport Lines		Marion County, FL		Stephen E. Hilker, PA
Mar 21, 1997	Deposition	Soja v. Roadtec and Astec	Pltf	Duval, FL		Peek & Cobb, Pa
Apr 29, 1997	Deposition	McClean v. Skate 'N Space	Def	Clay County, FL		Lester & Mitchell, Pa
June 26, 1997	Deposition	McConnell v. Marion County	Def	Marion County, FL		Slonaker & Olsen. Pa
June 22, 1998	Deposition	Bankers Insurance Company as Subrogee of Pixie Shuman v. State Industries a foreign corporation and Scotty's, Inc.	Pltf	St Johns County, FL	97-5073-CA-52	Freeman & Freeman
Feb 25, 1998	Deposition	Officer I.W. Bramlitt, Jr.	Pltf	Duval, FL	96-03627-CA	Gentry, Phillips & Hodak, PA
June 5, 1998	Deposition	Margotta v. H.C. Dairy Farms, Inc.	Def	Polk County, FL	GCG-97-2446	W. James Kelly, PA

Date	Deposition Trial	Case Title	Pltf Def	Court Location	Docket No.	Attorney
June 22, 1998	Trial	Margotta v. H.C. Dairy Farms, Inc.	Def	Polk County, FL	GCG-97-2446	John A. Powell
June 23, 1998	Deposition	Southside Chiropractic Clinic, Pa v. Nationwide Insurance	Def	Duval County, FL	97-000827-CA	The Cramer Law Firm Atty Len Magid
June 25, 1998	Deposition	Gregory Higgins and Brian Higgins v. Integon Insurance	Def	Broward County, FL	98-7565 (52)	Law Office of Bohdan Neswiacheny Atty Thomas McCausland
June 29, 1998	Deposition	Stapler v. CSX Intermodal, Inc.	Def	Duval County, FL	95-02835-CA	McGuire Woods Battle & Boothe, Atty Scott Cairns
Dec 16, 1998	Deposition	Owens & Pridgen adv. Container Corp	Def	Nassau County, FL	97-1135-CIV-J-10C	
Feb 1, 1999	Deposition	Milton v. Utz	Pltf	Duval County, FL	98-01571-CA	Gentry, Phillips, & Hodak, PA, Atty Mary K. Phillips
Aug. 3, 1999	Deposition	Baker v. United Industries		Volusia County, FL	99-30349-C10-22A	Greenberg Traurig, atty Lisa Harris
Oct. 5, 1999	Deposition	Matheson v. Whirlpool	Pltf	Duval County, FL	Resolute Resources, Inc	Warpinski, Kellogg & Ferrante, atty Peter Kellogg
March 2, 2000	Arbitration hearing	Matheson v. Whirlpool	Pltf	Duval County, FL	Resolute Resources, Inc	Warpinski, Kellogg & Ferrante, atty Peter Kellogg
Apr 27, 2000	Deposition	Rennie Carter v. Allstate Insurance Company	Def	Duval County, FL	00-0000145-CC	Tyler & Hamilton, atty Ty Tyler
Aug. 4, 2000	Trial	Joseph Roberson v. Hunters Auto Electric	Pltf	Duval County, FL		William R Swain & Assoc, atty Maytel Sorondo Bonham
June 18, 2001	Deposition	Carol Jean Bowser v. Mark Andrus Jackson	Pltf	Duval County, FL	99-03553-CA	Bullock, Childs, Pendley, Reed, Herzfeld & Rubin, atty Ronald

Date	Deposition Trial	Case Title	Pltf Def	Court Location	Docket No.	Attorney
						Reed Ebbets, Armstrong & Traster, atty Chobee Ebbets
Feb. 2002	Trial	Samuel & Beth Lloyd v. Curtis Industries	Pltf	Putam County, FL	99-5329-CA-52	Inman & Fernadez, PA atty Kristie Ledoux
April 30, 2010	Deposition CED Case No. 71702.1	Aaron Herman & Joy Martin v. Bobby Joyce Jennings	Def	Duval County, FL	16-2009-CA- 012967	For: Law Offices of Patricia E. Garagozlo, atty Jennifer Cassady; By: Morgan & Morgan, atty Megan Searls
May 6, 2010	Deposition CED Case No. 71701.1	Oscar Moreno and Matthew Moreno vs. Michael Barreto and Bright House Networks, LLC	Def	Osceola County, FL	2009 CA 005002 AN	By: Morgan & Morgan, PA, Nicholas P. Panagakis For: Quintairos, Priteto, Wood & Boyer, PA, Daniel S. Liebowitz
September 1, 2010	Deposition CED Case No. 71718.1	Douglas A. Danz v. Sanitation Maintenance, Inc.	Def	Broward County, FL	09-CACE- 43572-14	By: Harvey MCohen, Cohen & Juda, P.A., For: Hugh Behan
October 6, 2010	Trial CED Case No. 71718.1	Douglas A. Danz v. Sanitation Maintenance, Inc.	Def	Broward County, FL	09-CACE- 43572-14	Hugh Behan, defense counsel
October 26, 2010	Deposition CED Case No. 71816.1	Herberling v. Botelho & Rood	Def	Polk County, FL	38-2010-CA- 00140	By: Michael Sechrest, Fisher, Butts, Sechrest, Warner & Palmer, P.A.; For: Karin Posser, Vernis & Bowling
December 8, 2010	Trial CED Case	Herberling v. Botelho & Rood	Def	Polk County, FL	38-2010-CA- 00140	Karin Posser, Vernis & Bowling, defense counsel

Date	Deposition Trial	Case Title	Pltf Def	Court Location	Docket No.	Attorney
	No. 71816.1					
May 10, 2011	Trial CED Case No. 71728.1	Valverde v State Farm	Pltf	Broward County, FL	08-53439 CACE 05	James C. Ligman, Ligman & Martin, P.L.,
February 24, 2012	Deposition CED Case No. 71672.1	Phillips v. LDG Isla Vista, et al	Def	Collier County, FL	07-477-CA	By: James E. Moon, Quintairos, Prieto, Wood & Boyer For: Klein, Glasser, Park, Low & Pelstring, PA Jim Pelstring & Micahel Breen
April 9, 2012	Deposition CED Case No. 71847.1	Hutchins v Craven Land Corp.	Def	St Johns County, FL	CA10-2132	By: Thomas F. Slater, Pajic & Pajic For: The Ohara Law Firm: Ohara, Halvorsen & Humphries
August 6, 2012	Deposition CED Case No. 8440.1	Olsen v. Bill Shook Designs	Def	Citrus County, FL	2008-CA-5343	By: Carolyn Salzman, The Salzmann Firm For: Roland Hermida, Banker, Lopez, Gassler
November 20, 2012	Deposition CED Case No. 72228.1	Gail Levesque v. Publix Supermarkets, Inc.	Def	Indian River County, FL	312009CA0130 92	By: David M. Carter, Gould Cooksey Fennell For: M. Scott Kirk, Rumberger, Kirk & Caldwell
November 21, 2012	Deposition CED Case No. 71641.1	Wahlbeck v. D'Angelo.	Def	Pinellas County, FL	52-2009-CA- 010918	By: Michael L. Walker; Michael L Walker, PA For: Karen A. Barnett, Barnett

Date	Deposition Trial	Case Title	Pltf Def	Court Location	Docket No.	Attorney
						& Associates
January 16, 2013	Deposition CED Case No. 72151.1	Gaulding v. U-Haul, Patrick Weigand, Earthgrains, et al	Pltf	Duval County, FL	16-2010-CA-008297	By: Edward McCarthy, Rogers Towers, PA For: T. Daniel Webb, Vernis & Bowling
March 18, 2013	Deposition CED Case No. 72096.1	Taylor Newman Carpentry, Advanced Powder v. Classic Soft Trim	Def	Seminole County, FL	10-CA-2685-11-L	By: Wayne Tosko, Vasquez & Tosko, LLP For: Jay D. O'Sullivan, Quintairos, Prieto, Wood & Boyer, P.A.
July 11, 2013	Deposition CED Case No. 72235.1	Charles Nelson, Jr. vs. James M. Jones	Pltf	Duval County, FL	16-2011-CA-009979	By: Kristen M. Van Der Linde, Boyd & Jenerette, P.A. For: David A. Wolf, Wood, Atter & Wolf, P.A.
September 17, 2013	Deposition CED Case No. 72077.1	Remzija Murgic v. TBC Retail Group	Def	Duval County, FL	16-2010-CA-005171	By: J. Alfred Stanley, Jr. For: Benjamin Bedard, Roberts, Reynolds, Bedard & Tuzzio, PLLC
January 24, 2014	Deposition CED Case No. 72052.1	Moorings at Lantana Condominium No. Two v. RL Lantana Boatyard, et al.	Def	Palm Beach County, FL	50-2007-CA-021461	By: R. Scott Clayton, Conroy, Simberg, Ganon For: John Chiocca, Chiocca & Chiocca, P.A.
May 16, 2014	Deposition CED Case No. 72421.1	Audry Ratcliff v. Roop LLC	Def	Duval County, FL	16-2012-CA-012174	By: Kristopher Nowicki, Nooney & Roberts For: Laura Starrett, Law Office of Amy Warpinski

Date	Deposition Trial	Case Title	Pltf Def	Court Location	Docket No.	Attorney
July 25, 2014	Deposition CED Case No. 72589.1	Rebekah J. LeBlanc v. Jessica L. Adams, et al.	Def	Palm Beach County, FL	50-2012-CA-014026	By: Julio Diaz, Jr., Law Offices Sanabria Llorente & Assoc. For: Jessica King, Law Offices of J. Christopher Norris
November 13, 2014	Deposition CED Case 72667.1	Randall Cochrane v. Gabrielle Youngblood	Def	Duval County	2014-CA-00242	By: Daniel Iracki, Coker, Schickel, et al,P.A. For: Cary A.W. Braswell, Law Office of Jack D. Evans
January 21, 2015	Deposition CED Case 72555.1	Amanda Maguire v. Kenneth Cooper	Def	Glynn County, GA	CV-2013-0065	By: Alan J. Hamilton, Shiver, Hamilton, LLC For: H. Lee Pruett, Levy & Pruett